healing properties have, says Prof. Barrois, from the most remote antiquity, attracted patients suffering from eczema, arthritis of every kind, and other afflictions. But, with regard to Prof. Gudger's ingenious explanation of the miraculous draught of fishes, coupled with Lortet's description of the behaviour of grebes over a shoal of large Chromids and Canon Tristram's account of their dorsal fins as seen at the surface, surely the wonder is that experienced fishermen like St. Peter should have needed outside assistance, let alone superhuman aid, as is implied in the narrative of St. John's Gospel.

T. R. R. S.

Tunbridge Wells, October 30.

In the passage from Lortet's work on the Lake of Tiberias, quoted in Prof. Gudger's interesting letter in Nature of October 28, p. 572, the scientific title of the crested grebe is given as *Podiceps cristatus*. This misrendering of the true name of the genus Podicipes may be traced, I think, to Yarrell, for it appears in his "History of British Birds," published in 1845. Yarrell was not a classical scholar; but it is strange that the late Lord Lilford should have slipped into the same error in his splendid "Coloured Figures of British Birds." The difference in form is important, because Podiceps, if it means anything, means "rump-headed"; whereas in coining the word Podicipes, meaning "rump-footed," Linnæus indicated the posterior position of the feet so characteristic of the genus.

Herbert Maxwell.

Monreith, Whauphill,
Wigtownshire.

Prof. E. W. Gudger's letter on this subject in Nature of October 28, p. 573, is interesting from the natural history point of view, but it misses the most suggestive point in the narrative. That point is the number—one hundred and fifty and three. What is the meaning of this very definite figure? It will scarcely be contended that the number is merely the simple statement of a historic fact—that the fishes caught did actually number one hundred and fifty and three, neither more nor less! The naïve literalism of such an explanation is totally blind to the true significance of the story.

Obviously, the story is a parable. The lake of Gennesaret is the world. The fishes are the souls of men. The net that is not broken is the Church. And the number? That is a problem, but an explanation I heard given in a sermon by my father, the late Rev. R. B. Drummond, of Edinburgh, seems to meet the case. Where he found the solution I do not know. It was not original.

The Jews, as is well known, attached a mysterious significance to numbers, and if they met a definite number like this, they would not pass it by unheeding, but would try to discover its meaning. Well now, this number is what is called the perfection of the number 17; that is to say, it is the number arrived at by adding all the consecutive numbers from 1 to 17 inclusive. And the number 17 itself is the sum of the two sacred numbers 7 and 10. These again (here I am a little vague as to why) stand respectively for the Jews and the Gentiles. Hence the story means that the net of the Church is able, without breaking, to gather together not only, as some contended, Jews and those who became Jews, but all sorts and conditions of men of every race and tribe.

W. B. Drummond.

Baldovan Institution, by Dundee.
November 1.

Prof. Gudger's communication under this heading in Nature for October 28, p. 572, has brought back to me a vivid recollection of a fishing incident in the north-west of Ireland. About a dozen years ago I spent a week-end at Ballina, County Mayo, and as the express to Dublin did not leave until after mid-day, I devoted Monday forenoon to a ramble along the banks of the Moy river. Observing several men, with a boat and draw-net, making a succession of fruitless attempts to land fish, I crossed the river and made my way to them. It was true—they had toiled and had caught nothing. They were putting out to make another attempt, and I offered them five shillings for the next haul. They declined. The net was hauled in, and there was not a scrap of anything in it. They put off again, and I repeated my offer, which was rejected, and the net came in empty, as before. With all their futile endeavours the men were not in the least put out. Calmly the boat and net were again got ready, and I was told it would be no use offering to buy the haul. When the net was landed it was found to have brought in one little fish—a sprat in size! Apparently this was looked upon as a good sign—a command to try again, for, still undaunted, the men persevered—they rowed off cheerfully, let out the net, then returned to shore and hauled at the net, but evidently it was harder work than on any previous occasion. When the operation was completed, hundreds—the men said eleven hundred—salmon had been landed! A school from the sea had come up on the rising tide.

Hy. Harries.

October 28.

On the Reality of Nerve Energy.

I have only to-day seen Dr. Adrian's letter of September 30 in which he states with great clearness the present-day physical explanation of the nature and transmission of the nerve impulse.

It seems to me that it is the relation of this nerve impulse to nerve energy that stands in need of elucidation. My present concern is not so much to recommend the more extensive use of the term nerve energy as to make sure that when physiological or medical writers use it, we shall have some more accurate notion of what they mean by it. Evidently, from what Dr. Adrian says, sometimes they mean mental energy. Surely mental energy is not what is meant in the following paragraph, "In defæcation, when all the nerve energy of the cord is directed into one channel . . ." (Verdon, "Angina Pectoris," Brighton, 1920, p. 357). The late Sir William Osler wrote: "An organisation which is defective in what, for want of a better term, we must call nerve force . . ." ("Principles of Medicine," 1895, p. 1032).

Prof. Halliburton, in reviewing von Monakow's "Die Lokalisation im Grosshirn" (*Physiol Abst.*, Nov. and Dec. 1918), thus expressed himself, "The introduction of a change in the quantity of nervous energy (Hughling's Jackson) passing over a given system of Conduction paths . . ." In his "Text-book of Physiology" (London, Churchill, 1912, p. 1211), Prof. Starling wrote: "During the second stage (of asphyxia) there is a discharge of nerve energy which spreads throughout the whole central nervous system, beginning in the Bulbar Centres . . ." In none of these quotations is it a synonym for mental energy, unless, perhaps, we except Osler's use of it.

(To recognise "mental energy" as a real existence in the sense of being a *vera causa* of neural processes is, I believe, necessary, but it involves grave difficulties both in psychology and metaphysics.)

The authors just quoted are surely not indulging

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in metaphors; they evidently have something quite definite before them which they believe is conveyed to their readers. Is it what other writers, *e.g.* Sir Frederick Mott, would call innervation? Apparently so, for he writes in "The Brain and the Voice in Speech and Song" (*Harper's*, 1910) of "innervation currents." Now currents must be real, must be a flowing of something.

Clinicians—neurologists—believe in nerve energy, but apparently they do not derive their belief from their physiological teachers, for, according to McDougall, "the professional physiologists refer to it (nerve energy) contemptuously as a survival from the Dark Ages." Without doubt, something here is in need of being cleared up.

The intelligent layman thinks there *is* such a thing as "nerve energy," physicians use the term constantly, some professional physiologists use it when they find it convenient, and yet Dr. Adrian assures us that "as a physiological concept, 'nerve energy' has little to recommend it." If that is so, it is unfortunate the term is so popular. Dr. Adrian, however, concedes that "If the term 'nerve energy' is to be retained, it might be used to mean the total potential energy in the neurone available for use in the transmission of impulses."

This definition is so broad that it would cover (as it should) such cases of innervation as cerebellar control of other nerve centres, as well as unconscious cerebral inhibition of certain lower centres, neither of which could be called mental energy.

This is all that is wanted as a beginning of the clearing of the air. In this sense, nerve energy is real. I had only suggested it might be measured in order, if possible, to satisfy the demand that as a form of energy it should be measured.

It now remains for some physiologist to discuss the reality of nerve energy by defining the concept, relating it to nerve impulses and to innervation-processes, and placing the term in his index. Then the neurologist and psychopathologist would know whether he was using the term nerve energy in the same sense as that in which other men of science use it. In time, something more definite than at present would filter through to the laity.

D. FRASER HARRIS.

Dalhousie University, Halifax, N.S.,
October 11.

Habits of *Echinus esculentus*.

IN the October issue of the Journal of the Marine Biological Association, Miss Trewavas records the occurrence of *Echinus esculentus* between tide-marks on the Cornish coast and makes a request for information "of the occurrence or absence of this sea-urchin between tide-marks at other parts of the British coast."

In this district *E. esculentus* occurs abundantly between tide-marks in spring and early summer, on rocky coasts; a few may be found at almost any other season. About February or early March a shoreward migration seems to set in, so that in suitable weather conditions some hundreds may be collected at springs between April and June. Then their abundance decreases until about November, from when until January it is at a minimum. This inshore vernal maximum is coincident with the spawning season; ripe individuals being found from February to August with a maximum occurring in early May. A similar shoreward spawning migration occurs in other, chiefly Boreal, species—*Solaster papposus, S. endeca, Henricia sanguinolenta, Archidoris tuberculata, Jorunna Johnstoni, Aeolidia papillosa, Leander squilla, Spirontocaris pusiola,* and doubtless various other species.

The presence of *E. esculentus* between tide-marks is strongly influenced by various conditions—*e.g.* (1) in April 1921 a spell of sharp frosts caused numerous urchins which had invaded the intertidal zone to retire to deeper water, where they were visible in abundance in 1-2 fms.; (2) during the hot spell of May and June 1921 they were unusually scarce between tide-marks; (3) in April 1922 a spell of heavy weather either washed away or caused a temporary seaward movement of urchins from the intertidal area, and further, although they had also been abundant in 1-2 fms., none were to be seen there, all having apparently retired into the shelter of crevices and boulders. There is some evidence that males approach the shore ahead of the females. While inshore, urchins feed very largely on barnacles.

On an average the life of *E. esculentus*, as an urchin, begins about midsummer: the first months are spent in the Laminarian zone browsing freely on such limy food as Membranipora; by the end of the calendar year some are well over 2 cms. in diameter and at the close of their I.-year period about 4 cms., the more advanced having spawned about May at an approximate age of 10-12 months. The II.-year group appear to range between 4-7 cms., the III.-year group 7-9 cms., and the IV.-year group 9-11 cms. Largely owing to the prolonged spawning period there is no discontinuity between the year groups, which merge into one another. The adults feed on Polyzoa, Laminaria—particularly if encrusted with Membranipora,—balanids, etc. In October urchins are found with large gonads rich in fats; an occasional one may have a few immature ova. The yearly cycle would seem to be:

July–November—Growth and fattening of gonads—Laminarian zone offshore.
December–March—Maturation of gonads—Laminarian zone offshore.
April–June—Spawning—largely inshore.

RICHARD ELMHIRST.

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Perseid Meteors in July 1592.

MAY I bring it briefly to the notice of readers of NATURE that there is apparently a reference in the history of Akbar, the Emperor of India, to a brilliant display of Perseid meteors in the Panjab about the end of July 1592. The passage occurs in the account of the 37th year of the reign, and just before the description of Akbar's expedition to Cashmere.

Akbar and his son Daniel had left Lahore and crossed the Rāvī, and were encamped at a garden called the Rāmbārī. On the 27th day of Tīr O.S., which might correspond to about July 28, 1592, three hundred little stars or pieces of stars (*sitāracha*) were seen traversing the heavens from west to east. The Persian text does not say whether this was in the day or in the night, but presumably it was the night or at least the evening, for the meteors would not be visible during the day.

Akbar and his son were so alarmed at this appearance, which took place three days after their departure from Lahore, and while they were still encamped at Rāmbārī, that they at once consulted the astrologers who were with them in the camp and by their advice broke up their camp and returned to Lahore. Nor did they resume their march till about a fortnight later and after they had ascertained a more auspicious day for a start.

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